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## An Overview of Direct Somatic Reprogramming: The Ins and Outs of iPSCs.

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### Public Summary:

Stem cells are classified into embryonic stem cells and adult stem cells. An evolving alternative to conventional stem cell therapies is induced pluripotent stem cells (iPSCs), which have a multi-lineage potential comparable to conventionally acquired embryonic stem cells with the additional benefits of being less immunoreactive and avoiding many of the ethical concerns raised with the use of embryonic material. The ability to generate iPSCs from somatic cells provides tremendous promise for regenerative medicine. The breakthrough of iPSCs has raised the possibility that patient-specific iPSCs can provide autologous cells for cell therapy without the concern for immune rejection. iPSCs are also relevant tools for modeling human diseases and drugs screening. However, there are still several hurdles to overcome before iPSCs can be used for translational purposes. Here, we review the recent advances in somatic reprogramming and the challenges that must be overcome to move this strategy closer to clinical application.

### Scientific Abstract:

Stem cells are classified into embryonic stem cells and adult stem cells. An evolving alternative to conventional stem cell therapies is induced pluripotent stem cells (iPSCs), which have a multi-lineage potential comparable to conventionally acquired embryonic stem cells with the additional benefits of being less immunoreactive and avoiding many of the ethical concerns raised with the use of embryonic material. The ability to generate iPSCs from somatic cells provides tremendous promise for regenerative medicine. The breakthrough of iPSCs has raised the possibility that patient-specific iPSCs can provide autologous cells for cell therapy without the concern for immune rejection. iPSCs are also relevant tools for modeling human diseases and drugs screening. However, there are still several hurdles to overcome before iPSCs can be used for translational purposes. Here, we review the recent advances in somatic reprogramming and the challenges that must be overcome to move this strategy closer to clinical application.

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